

**New Mexico Universities Working Group on Water Supply Vulnerabilities
Report to the Interim Committee on Water and Natural Resources**

December 2, 2014

This Working Group was funded by the State Legislature in 2014 to: (1) assess the current status of water supply and demand after years of severe drought in New Mexico; (2) put the current drought into long-term context with reduced surface water, groundwater depletions and economic activity; and (3) develop a list of vulnerabilities and promote policy strategies to mitigate these vulnerabilities. Funding for the Working Group uniquely and directly involves researchers from all three research universities in New Mexico, and includes both water scientists and social scientists. Work began early in FY 2015, so this report presents preliminary findings after just a few months of research.

FY15 funding is supporting an initial focus on the Lower Rio Grande, which is heavily affected by the extremely low water storage in Elephant Butte Reservoir. We have compared the current drought situation with the historical drought of the 1950s, examining hydroclimatic changes that have occurred over the past half-century, which impact surface water and groundwater supplies, and the economic and social impacts of the 1950s and current droughts.

Key preliminary findings of the Working Group include:

- * Late summer rains in 2013, and a good summer monsoon season in 2014, have alleviated short-term drought conditions across much of the state. However water storage on the Rio Grande is still very low and will require one (or more) years of heavy snowpack to replenish reservoir storage.
- * The current winter forecast is more favorable for abundant snowpack than it has been since 2010, but still quite uncertain. Actual snowmelt-fed streamflow in major rivers in New Mexico has been lower than was forecast for each of the past several years of drought, making water allocation decisions early in the year very difficult.
- * Groundwater depletions since the 1950s present a worsening long-term challenge, and diminish the overall resiliency of our water supply. Issues related to the effects of groundwater pumping on the surface water supply of the Rio Grande Project have also led to large-scale interstate litigation.
- * The drought of the 1950s was associated with a dramatic shift away from agriculture as the primary driver of the state's economy, as the service sector became a more important source of jobs.
- * Farm characteristics and agricultural production in southern New Mexico have changed since the 1950s. There are more smaller farms and production has shifted toward permanent crops, such as pecans, that require long-term water supply commitments to keep trees productive. While profitable, such crops typically have high water demands and decrease our short-term ability to reduce watering in times of severe shortages.

Based on these findings, we plan to focus our attention for the remainder of FY15 on the following topics:

- * We will closely examine streamflow forecasts for the Spring 2015 melt season, in collaboration with personnel from the U.S. Natural Resources Conservation Service, the U.S. Geological Survey, and the Office of the State Engineer, in an attempt to understand and address the problems associated with early season forecasts.
- * We will continue assessment of the principal social and economic vulnerabilities associated with water shortages in the Lower Rio Grande, and update these vulnerabilities as the 2015 water supply situation becomes clearer.
- * We will initiate development of possible strategies for strengthening long-term resiliency to water shortages by bringing supply and demand closer to balance.
- * We will initiate development of possible strategies for addressing short-term deficiencies in surface water supplies based on prudent use of groundwater resources, and cooperate with legislators and water managers in the LRG to develop effective, resilient water policy and practices to be more responsive to short, medium, and long-term fluctuations in available water supply.